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# DEPARTMENT OF THE AIR FORCE

## SUPPORTING DATA FOR FISCAL YEAR 1984 BUDGET ESTIMATES

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## DESCRIPTIVE SUMMARIES

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

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FY 1984 RDT&E DESCRIPTIVE SUMMARY

Program Element: #35158F

DoD Mission Area: #333 - Strategic Communications

Title: Satellite Data System (SDS)

Budget Activity: #3 - Strategic Programs

1. RESOURCES (PROJECT LISTING): (\$ in Thousands)

<u>Project Number</u>	<u>Title</u>	<u>FY 1982 Actual</u>	<u>FY 1983 Estimate</u>	<u>FY 1984 Estimate</u>	<u>FY 1985 Estimate</u>	<u>Additional to Completion</u>	<u>Total Estimated Cost</u>
	TOTAL FOR PROGRAM ELEMENT	28,393	7,886	7,624	0	[	]

2. BRIEF DESCRIPTION OF ELEMENT AND MISSION NEED: The Satellite Data System (SDS) is a multi-payload, communications satellite which provides reliable communications [ ] SDS provides a portion of the coverage required by the Air Force Satellite Communications System for essential command and control communications to our nuclear capable forces. It also provides a high speed link between Air Force Satellite Control Facility remote tracking stations for command and control of national space assets and [ ]

3. COMPARISON WITH FY 1983 DESCRIPTIVE SUMMARY: (\$ in Thousands)

RDT&E	28,393	7,886	2,614	[	]
Missile Procurement	41,770	22,518	10,200	[	]

RDT&E Changes

FY 84 - \$5.0M increase for completion of first time integration on the Space Shuttle  
 FY 85 to Complete - Funds [ ]

Missile Procurement Changes

FY 84 - \$15.0M increase for continued launch support for the remaining two satellites to be launched on Titan III/Agna launch vehicles  
 FY 85 to Complete - Funds for launch support in FY 85 and beyond [ ]

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4. OTHER APPROPRIATION FUNDS: (\$ in Thousands)

	<u>FY 1982 Actual</u>	<u>FY 1983 Estimate</u>	<u>FY 1984 Estimate</u>	<u>FY 1985 Estimate</u>	<u>Additional to Completion</u>	<u>Total Estimated Cost</u>
Misale Procurement: Funds	41,750	22,318	25,223	0	[	]
Quantities	0	0	0	0		
Operations and Maintenance, Funds	11,079	11,642	15,898	0		

5. RELATED ACTIVITIES: The space segment of the Fleet Satellite Communications System was developed, procured, and launched under the Navy's Program Element, 33109N. The Air Force ground Ultra High Frequency radio terminals needed for operation with the Air Force Satellite Communications System packages on Fleet Satellite Communications and Satellite Data System satellites are funded within the Air Force Satellite Communications System Program Element, 33601F. Terminals installed in aircraft were funded in the specific weapons system/aircraft Program Element. The Air Force Satellite Control Facility network is funded under Program Element, 35110F. [ Space Shuttle flights for the Satellite Data System satellites are provided by the Space Launch Support Program, Program Element, 35171F. MILSTAR, a new highly jam-resistant satellite is being developed under Program Element, 33603F. ]

6. (U) WORK PERFORMED BY: Air Force Systems Command's Space Division, Los Angeles, CA, is responsible for the Satellite Data System. The prime contractor is Hughes Aircraft Company, El Segundo, CA. General Systems Engineering and Integration is performed by the Aerospace Corporation, El Segundo, CA.

7. (U) SATELLITE DATA SYSTEM (SINGLE PROJECT LESS THAN \$10M IN FY 1984):

A. (U) Project Description: See paragraph 2

B. Program Accomplishments and Future Efforts:

(1) FY 1982 Accomplishments: Full scale engineering development continued on satellite F-6 with improved anti-jam capabilities for the Air Force Satellite Communications System payload and optimization for launch on the Space Shuttle. First time integration of this satellite on the Space Shuttle also continued. [ ]

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]and the production of the sixth satellite (F-5A) continued.

(2) FY 1983 Planned Program: Major development activity for the seventh satellite (F-6) will be complete. First time integration of F-6 on the Space Shuttle will be continued. [ Launch support capability for satellites F-5 and F-5A which will be launched on Titan/ Agena launch vehicles will be sustained. On-orbit support of operational SDS satellites will also be sustained. ]

(3) FY 1984 Planned Program and Basis for FY 1984 Budget Request: [ First time integration of the satellite on the Space Shuttle will continue. Launch support for the satellites remaining to be launched and on-orbit support of the operational SDS satellites will continue. ]

(4) Program to Completion: Program Element 35158F will be [ SDS satellites will continue to support the Air Force Satellite Communications System by providing critical [ communications coverage ]

C. Major Milestones:

<u>Milestones</u>	<u>Date</u>
Program Start	October 1971
System Critical Design Review	March 1974
Launch First Satellite (F-1)	[ ]
Launch Second Satellite (F-2)	
Full Operational Capability	
Launch Third Satellite (F-3)	
[ ]	1/

Explanation of Milestone Changes:

1/ Two month slip due to priority being placed on the delivery of the sixth satellite on schedule. The new delivery date is still well in time for the manifested Space Shuttle launch in [ ]

8. (U) PROJECTS OVER \$10 MILLION IN FY 1984: Not applicable

Budget Activity: Strategic Programs, #3  
Program Element: #35158F, Satellite Data System

Test and Evaluation Data

1. Development Test and Evaluation: The development contractor for the Satellite Data System was Hughes Aircraft Company, El Segundo, California. The first satellite was launched in [ ] Initial Operational Capability was established in [ ] The first satellite (F-1) was funded entirely within the development program. The second satellite (F-2) was the first vehicle funded under the production program. The development hardware included engineering models of the communication subsystems, a structural model spacecraft (X-1) and a qualification model spacecraft (Y-1). Development tests of the communications subsystems engineering models were completed in November 1973. Structural testing was satisfactorily completed on the X-1 engineering model spacecraft in May 1975. Systems level qualification was completed in October 1975 with all critical performance specifications met or exceeded. System level qualification was designed to demonstrate design integrity and performance to specification via a series of tests including shock, acoustic, modal survey, thermal, electromagnetic interference, solar-thermal vacuum, and integrated system test. The F-1 spacecraft was acceptance tested during the [ ] The Y-1 spacecraft was a fully configured spacecraft which has been refurbished and designated as flight vehicle (F-4).

2. (U) Operational Test and Evaluation: A portion of the Satellite Data System is to be part of the Air Force Satellite Communications space segment. Classical separate Initial Operational Test and Evaluation was not conducted on the space segments since all operational objectives and requirements were fully integrated into the Development Test and Evaluation effort and were not broken out separately. Compatibility, operational characteristics, and orbit performance of payloads supporting the Air Force Satellite Communications program are scheduled to be demonstrated during the follow-on test and evaluation which is managed by the Air Force Test and Evaluation Center. Results to date are contained in Development Test and Evaluation reports (see paragraph 1 above).

3. (U) Systems Characteristics:

Characteristics

Data Rate in words  
per minute

Message Bit Error Rate  
per ten thousand bits

Anti-Jam Protection (decibel watt)

Objectives

Demonstrated

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